WHAT IS CLAIMED IS:

1.    A copolymer of ethylene and $\alpha$-olefin of from 4 to 20 carbon atoms, having melt flow rate of from 1 to 100 g/10min, an activation energy for melt flow of 60 kJ/mol or more, melt tension at 190°C (MT), intrinsic viscosity ([η]) and a chain length A which satisfy the following formula (1) to (3), wherein the chain length A is a chain length at peak position of a logarithm normal distribution curve of a component having the highest molecular weight among logarithm normal distribution curves obtained by dividing a chain length distribution curve obtained by gel permeation chromatography measurement into at least two logarithm normal distribution curves:

$$2 \times MFR^{-0.59} < MT < 20 \times MFR^{-0.59} \qquad (1)$$

$$1.02 \times MFR^{-0.094} < [\eta] < 1.50 \times MFR^{-0.156} \qquad (2)$$

$$\log A \geq -0.0815 \times \log(MFR) + 4.05 \qquad (3).$$

2.    A copolymer of ethylene and $\alpha$-olefin of from 4 to 20 carbon atoms, having melt flow rate of from 1 to 100 g/10min, an activation energy for melt flow of 60 kJ/mol or more, melt tension at 190°C (MT), intrinsic viscosity ([η]) and a characteristic relaxation time ($\tau$; unit is sec) at a temperature of 190°C which satisfy the following formula (1), (2) and (4):

$$2 \times MFR^{-0.59} < MT < 20 \times MFR^{-0.59} \qquad (1)$$

$$1.02 \times MFR^{-0.094} < [\eta] < 1.50 \times MFR^{-0.156} \qquad (2)$$

$$\tau \geq 8.1 \times MFR^{-0.746} \qquad (4).$$

3. The copolymer of ethylene and $\alpha$-olefin of from 4 to 20 carbon atoms according to Claim 1 or 2, wherein a swell ratio (SR) and the $[\eta]$ satisfy a relation of the following formula (5) or (6):

in a case of $[\eta] < 1.20$,

$$-0.91\times[\eta]+2.262<SR<2 \tag{5},$$

in a case of $[\eta] \geq 1.20$,

$$1.17<SR<2 \tag{6}.$$